

AMENDMENTS TO THE CLAIMS

The following is a complete, marked up listing of revised claims with a status identifier in parentheses, underlined text indicating insertions, and strikethrough and/or double brackets indicating deletions.

Listing of the Claims

1. (CURRENTLY AMENDED) A DNA chip, comprising:
a carrier; and
a microarray of spots, arranged on the carrier, containing immobilized catcher molecules, each spot containing a thin-film four pole system for the impedance-spectroscopic detection of binding events between the catcher molecules and target molecules of an analyte solution applied to the spots, the thin-film four-pole system including two polarization electrodes for generating an alternating electromagnetic field and two sensor electrodes for measuring a voltage drop in the analyte.
2. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 1, wherein the carrier includes a silicon substrate, on which the microelectrode system is integrated using thin-film technology.
3. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 1, wherein at least one sensor electrode is assigned a shielding electrode, which is held at the same electrical potential as the sensor electrode.

4. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 3, wherein the electrical potential of the sensor electrode is held at the shielding electrode by a buffer amplifier connected to the sensor electrode and having a gain of 1.

5. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 4, wherein the buffer amplifier is integrated on the carrier.

6. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 1, wherein at least one of at least one sensor electrode and at least one shielding electrode are directly electrically isolated from the analyte.

7. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 1, wherein a sensor electrode contains pointlike individual electrodes which are electrically connected to a buried electrode collective line by way of plated-through holes.

8. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 1, wherein the thin-film microelectrode system is embedded in a reaction layer containing catcher molecules.

9. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 8, wherein the thickness of the reaction layer is less than 100 μm and is correlated with the width of the electrodes or the interspaces thereof.

10. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 9, wherein the width of the electrodes is approximately 1 μm , and the thickness of the reaction layer corresponds to approximately 5-10 times the value of the electrode width.

11. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 8, wherein the reaction layer is a hydrogel.

12. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 1, wherein the thin-film four-pole system forms an interdigital current electrode arrangement with double meandering current taps.

13. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 2, wherein at least one sensor electrode is assigned a shielding electrode, which is held at the same electrical potential as the sensor electrode.

14. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 2, wherein at least one of at least one sensor electrode and at least one shielding electrode are directly electrically isolated from the analyte.

15. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 2, wherein a sensor electrode contains pointlike individual electrodes which are electrically connected to a buried electrode collective line by way of plated-through holes.

16. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 2, wherein the thin-film microelectrode system is embedded in a reaction layer containing catcher molecules.

17. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 9, wherein the reaction layer is a hydrogel.

18. (PREVIOUSLY PRESENTED) The DNA chip as claimed in claim 2, wherein the thin-film four-pole system forms an interdigital current electrode arrangement with double meandering current taps.

* * * * *

END OF CLAIM LISTING